Description

Method for determining the effects of fancy yarn

The invention relates to a method according to the preamble of claim 1.

When producing yarn, a uniformity of the yarn, which is as high as possible, is generally aimed for within narrow tolerances. On the other hand, the non-uniformity of the yarn is characteristic of fancy yarns. A yarn, in which thick locations with predetermined larger diameters and with predetermined lengths, the so-called effects, are present, are referred to as fancy yarns. The yarn sections located therebetween with a smaller diameter are referred to as webs.

It is known to carry out a diameter average value determination at the beginning of measuring at a spinning station, over the first yarn metre. This so-called reference diameter is the reference diameter for further evaluations. In the case of a fancy yarn, a reference diameter determined in this manner would be indicated to be thicker owing to the presence of effects, in other words thick locations, than the thickness of the web actually is. The recognition of the formation of effects is only possible on this basis of a simple averaging to an inadequate degree.

The object of the invention is to improve the determination of effects of a fancy yarn.

This object is achieved by a method with the features of claim 1.

Advantageous configurations of the invention are the subject of the sub-claims.

The method according to the invention makes it possible to recognise the effects better and to determine the effect diameter, also referred to as the effect thickness, and the effect length more correctly.

The web diameter, also called the web thickness, can be determined according to claim 3 largely uninfluenced by the effects and therefore substantially more accurately, than is possible with the known simple reference value formation in yarn measurements. This increased accuracy also has a positive effect on the accuracy of the effect determination.

It can be avoided with a method according to claim 4 that only a very brief exceeding or falling below of the limit diameter leads to a falsification of the effect length.

A variation value is advantageously determined, which provides the variation of the diameter over the effect length. For this purpose, the diameter is continuously measured within the effect length. The variation value can be provided as the average quadratic non-uniformity that provides information about the uniformity of the effect course. Conclusions about the quality of the subsequent end product, for example a fabric, can be drawn from the variation value. A high uniformity allows a clean image of the effects in the fabric to be expected, a lower uniformity, on the other hand, a blurred image. Determination of the average quadratic non-

uniformity corresponds to the known detection of the so-called CV value in the case of smooth yarn.

The method according to the invention allows detection of the effect length and effect thickness with values, which very closely approach the real configuration and therefore allow reliable information about the quality of the fancy yarn and the end product.

Further details of the invention can be found in the figures.

In the figures:

Fig. 1 shows a device for carrying out the method according to the invention,

Fig. 2 shows a fancy yarn, which is shown by arranging measured values of the yarn diameter side by side,

Fig. 3 shows a schematic diagram of a yarn effect.

Fig. 1 shows a section of a fancy yarn 1, which runs through a sensor 2, which is provided to measure the yarn diameter D. The sensor 2 is an optical sensor, as is known in principle, and which will not therefore be described in detail here. The sensor 2 is connected via a line 3 to the evaluation unit 4. The evaluation unit 4 determines the desired effect data from the measured values of the yarn diameter D transmitted by the sensor 2. The evaluation unit 4 transmits the effect data via the line 5 to an output mechanism comprising a monitor 6. The effect data can be shown in the desired form on the monitor 6.

The evaluation unit 4 is connected via the lines 7 to further evaluation units or computers, not shown.

Fig. 2 shows the view of the fancy yarn 1, as measured values arranged side by side. Effects 8 and webs 9 can be seen but the beginning and end of the effects 8 and the effect thickness or the effect diameter D_E and the web thickness or the web diameter D_{ST} cannot be recognised clearly and therefore not adequately.

The evaluation unit 4 registers the yarn diameter D after 2 mm yarn length, in each case. A cycle represents a measuring length of 2 mm yarn. In the view of Fig. 3, the yarn diameter D is shown in a percentage over the yarn length L_G as a curve 10. The curve 10 represents the web diameter D_{ST} in the view of Fig. 3 beginning from the left up to the point 11. From the point 11 the curve 10 rises and, at point 12, passes the value of the limit diameter D_{GR}. At point 13, the predetermined yarn length L_{V1} has been covered since reaching the point 12. After a diameter increase of 15% is registered at point 12, and the exceeding of the limit diameter D_{GR} continues over the predetermined length L_{V1}, for example for six cycles or 12 mm, the point 12 is defined as the beginning of the effect. The curve 10 falls below the limit diameter D_{GR} at the point 14. The falling below last until point 15 and therefore over the predetermined yarn length L_{V2}. Therefore, the point 14 is defined as the end of the effect. The effect length L_E is determined from the beginning and end of the effect between point 12 and point 14. An arithmetic average is formed from the four largest diameters 16 within the effect. The provision of the effect diameter is therefore largely independent of the

natural diameter variations in the effect area. This arithmetic average is defined as the effect diameter D_E.

A variation value, which makes a statement about the quality of the effects 8 possible, is determined on the basis of the variations of the yarn diameter D, which can be recognised in Figs. 2 and 3, in the area of the effect length of the effects 8. The variation value provides the average quadratic non-uniformity and is a measure of the uniformity of the effect course. The higher the uniformity of the effect course, the better the quality of the fancy yarn 1 and the end product produced therefrom, for example a fabric. The variation value is the relative dispersion of the individual values around the average of the yarn diameter D within the effect length.

Further configurations of the method within the scope of the invention are possible. The method according to the invention is not limited to the embodiment shown.